CASE REPORT

Enterobius vermicularis infection of the ovaryGeorge Powell,¹ Piyush Sarmah,² Bhawana Sethi,² Raji Ganesan³

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SUMMARY

Enterobius vermicularis is an intestinal parasite, which may occasionally involve extraintestinal sites including the female genital tract. We report a rare case of ovarian involvement, which presented with chronic right iliac fossa pain in a 31-year-old woman. A transvaginal ultrasound scan was suggestive of a right adnexal dermoid cyst; however, histological examination of the subsequent salpingo-oophorectomy specimen showed an abscess containing viable *E. vermicularis* ova.

E. vermicularis is the most prevalent human nematode worldwide. Its ova are ingested, larvae hatch and mature female worms journey to the perianal region where they lay eggs. Female worms may also migrate from the anus along the female genital tract. Although of low pathogenicity, complications such as infertility or peritonitis may arise.

eradicate any lingering genital tract or intestinal parasites and made a full recovery.

DISCUSSION

Parasitic worms, often referred to as helminths are a subset of eukaryotic parasites. They are divided into four groups with the intestinal parasite *E. vermicularis* belonging to the group nematodes (round worms).¹ *E. vermicularis* is also referred to as pinworm, threadworm or seatworm. Humans are the only known host with infection totalling over 200 million worldwide, making it the most prevalent human helminth. Thirty per cent of children are infected with the parasite favouring the 7-year to 11-year group; female to male infectivity is 3:1.³ Geographically, the parasite is more commonly seen in temperate climates. Factors such as overcrowding and poor sanitation increase infectivity.⁴

The infective cycle begins with ingestion of ova transferred from the perianal skin or fomites. Following the breakdown of the ova's proteinaceous coat, larvae are released and mature as they

BACKGROUND

Enterobius vermicularis is a highly prevalent helminth with over 200 million people carrying the parasite worldwide.¹ It resides in the intestines, but may occasionally involve extraintestinal sites including the female genital tract.² We report a rare case of ovarian *E. vermicularis*.

CASE PRESENTATION

A 31-year-old woman presented with a 12-month history of intermittent right iliac fossa and back pain. On examination, the abdomen was soft and non-tender. Speculum examination was unremarkable.

Full blood count showed a slightly elevated white cell count of 12.3 (10⁹/L) without eosinophilia. The differential diagnosis at this stage included appendicitis or a gynaecological aetiology such as pelvic inflammatory disease. A transvaginal ultrasound scan demonstrated a structure of mixed echogenicity in the right adnexa measuring 53×53×68 mm with no demonstrable colour Doppler. A dermoid cyst was suspected.

The patient underwent laparoscopy where a firm right adnexal mass was discovered adherent to the ovarian fossa, bowel, omentum and lateral pelvic wall. Right salpingo-oophorectomy was performed along with adhesiolysis. Histological examination of the ovary showed abscess comprising of a mixed inflammatory cell infiltrate including neutrophils, eosinophils and multinucleate giant cells. Admixed were numerous viable *E. vermicularis* ova (figure 1A,B). The background ovarian stroma was unremarkable showing a few functional cysts.

Further history taking elicited no symptoms suggestive of current or past intestinal parasitic infection. The patient received antiparasitic therapy to

Figure 1 (A) Abscess containing numerous *Enterobius vermicularis* ova (H&E stain; original magnification, ×20). (B) Viable *E. vermicularis* ova (H&E stain; original magnification, ×40).

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journey to their mating site in the caecum and its vicinity. After fertilisation, male worms die and females migrate to the perianal region to deposit eggs.⁴ This leads to symptoms of itching and scratching resulting in finger contamination, thus completing the cycle. Gastrointestinal symptoms may rarely occur but infection is generally asymptomatic.^{3–5}

Extraintestinal *E. vermicularis* has been reported in a variety of sites including most commonly the female genital tract as well as the lungs, liver, spleen, kidney, prostate and bladder.⁶ Although usually asymptomatic, genital tract symptoms reflect the site of involvement: vaginitis, endometritis, tubo-ovarian abscess, pelvic inflammatory disease or peritonitis. Infertility or peritonitis may be a secondary complication. Ovarian involvement is rare with only a handful of cases reported in the literature.^{7–11} The probable mechanism of spread is migration of gravid female worms from the perianal region to the vagina and subsequent ascent of parasites along the genital tract. Supporting evidence for this includes the exclusive presence of female worms and ova in reproductive tract lesions.⁴ Direct spread through the bowel wall to the peritoneal cavity is another possible route, particularly if there is disruption of bowel wall integrity.

Histologically, the adult worm is identified in cross section by its characteristic narrow lateral cuticular alae. Ova are more often seen owing to their robust nature; they may also be visualised inside gravid females. Extraintestinal infection generally results in granulomatous inflammation with the histological differential diagnosis including other organisms, such as actinomyces, schistosoma and tuberculosis.^{1 3}

In summary, *E. vermicularis* can involve extraintestinal sites, but ovarian involvement is exceptionally rare. Recognition of extraintestinal involvement is important, because although of low-pathogenicity complications such as peritonitis or infertility can arise. *E. vermicularis* remains an important differential diagnosis to consider when granulomatous inflammation is encountered within the female genital tract.

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Competing interests None.

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Learning points

- ▶ *Enterobius vermicularis* can rarely involve extraintestinal sites, most commonly the female genital tract.
- ▶ Recognition of extraintestinal involvement is important, because although of low pathogenicity serious complications can arise.
- ▶ Histologically, *E. vermicularis* remains an important differential diagnosis to consider when granulomatous inflammation is encountered within the female genital tract.

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